UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF PREVENTION, PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

DATE: 20/DEC/2005

SUBJECT: **Fipronil** Acute and Chronic Dietary Exposure Assessments for the Use of Fipronil on Onion Seed, Shallot Seed, Potatoes and Sweet Potatoes.

PC Code: 129121
DP Barcode: D324295

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Executive Summary

The purpose of this memorandum is to report the results of a dietary exposure analysis for the insecticide fipronil, [5-amino-1-(2,6-dichloro-4-(trifluoromethyl) phenyl)-4-((1,R,S)-trifluoromethyl)sulfinyl)-1-H-pyrazole-3-carbonitrile] for use on onion seed (dry bulb), shallot seed (dry bulb), potatoes and sweet potatoes. BASF also intends to continue to support the proposed tolerances for inadvertant residues on wheat commodities due to reduced replant intervals between crops. The residues of concern and in the tolerance expression for fipronil are fipronil and its 2 metabolites MB45950 (5-amino-1-(2,6-dichloro-4-(trifluoromethyl)phenyl)-4-[(trifluoromethyl)thio]-1H-pyrazole-3-carbonitrile) and MB46136 (5-amino-1-(2,6-dichloro-4-(trifluoromethyl)phenyl)-4-[(trifluoromethyl)sulfonyl]-1H-pyrazole-3-carbonitrile) and photodegradate MB46513 (5-amino-1-(2,6-dichloro-4-(trifluoromethyl)phenyl]-4-[(1R,S)-

(trifluoromethyl)]-1H-pyrazole-3-carbonitrile).

Acute Dietary Exposure Results and Characterization

The acute dietary risk assessment for fipronil shows that for all included commodities, the **acute dietary risk estimates are below the Health Effect Division's (HED's) level of concern (i.e. <100% acute population adjusted doses (aPAD))** for the general U.S. population (9.8% of the aPAD) and all population subgroups. The acute dietary risk estimate for the 95th percentile of the highest exposed population subgroup, children 1-2 years old, is 25% of the aPAD.

Chronic Dietary Exposure Results and Characterization

The Tier 1 chronic dietary risk assessment for fipronil showed that dietary risk estimates **exceeded HED's level of concern (i.e. <100% chronic population adjusted doses (cPAD))**; therefore, a partially refined chronic dietary assessment was performed with use of anticipated residues (ARs) from field trial data, processing factors where applicable, and %CT information from the previous risk assessment (DP Barcode: D248827, S. Levy, 02/20/2001). The refined, Tier 2 chronic dietary risk assessment for fipronil shows that for all included commodities, the chronic dietary risk estimates **still exceed HED's level of concern (>100% cPAD).** The chronic dietary risk estimate for the highest reported exposed population subgroup, all infants (< 1 year), is 120% of the cPAD.

Cancer

The HED Cancer Peer Review Committee (document dated 7/18/97) classified fipronil as a Group C chemical (possible human carcinogen). The HIARC determined that cancer dietary risk concerns due to long-term consumption of fipronil residues are adequately addressed by the chronic dietary exposure analysis using the RfD; therefore, a separate cancer dietary exposure analysis was not performed.

Water Contribution

The Environmental Fate and Effects Division (EFED) provided environmental fate and a comparative drinking water assessments for the proposed and registered uses of fipronil assuming 100% of fipronil and its metabolites are available for degradation, runoff, and leaching. The drinking water assessment was based on screening level models because available monitoring data represent cancelled fipronil uses (i.e., rice) or are not targeted to all fipronil use areas (DP Barcode: D319940, J. Hetrick, in process). This dietary risk analysis incorporated water concentration estimates from the proposed onion seed treatment scenario for both the acute and chronic dietary analysis. The acute water concentration, 0.006909 ppm, was determined by adding the 1 in 10 year peak concentrations for fipronil and its metabolites, while the chronic water concentration, 0.003063 ppm, was determined by adding the 1 in 10 year average concentrations.

I. Introduction

Dietary Exposure

Dietary risk assessment incorporates both exposure and toxicity of a given pesticide. For acute and chronic assessments, the risk is expressed as a percentage of a maximum acceptable dose. This is the population adjusted dose (PAD), which HED has concluded will result in no unreasonable adverse health effects. The PAD is the Reference Dose (RfD) divided by the special FQPA Safety Factor. Dietary risk is expressed as a percentage of the PAD. For acute and non-cancer chronic exposures, HED is concerned when estimated dietary risk exceeds 100% of the PAD. References which discuss the acute and chronic risk assessments in more detail are available on the EPA/pesticides web site: "Available Information on Assessing Exposure from Pesticides. A User's Guide", 6/21/2000, web link: http://www.epa.gov/fedrgstr/EPA-PEST/2000/July/Day-12/6061.pdf ; or see SOP 99.6 (8/20/99).

The most recent dietary risk assessment for fipronil was conducted by Breann Hanson (DP Barcodes: D316795 & D322529 & D322527, B. Hanson, 11/07/2005) for its use on turnips and rutabagas and a renewed registration for use on corn.

II. Residue Information

In this analysis the acute and chronic dietary exposure and risk estimates resulting from food intake were determined for the general U.S. population and various population subgroups resulting from the addition of onion seed (dry bulb), shallot seed (dry bulb), potatoes and sweet potatoes to the commodity residue list for fipronil.

Tolerances for residues of fipronil (+ its 2 metabolites and 1 photodegradate) have been established (40 CFR. §180.517(a)) for the following commodities: rice grain (0.04 ppm); rice straw (0.10 ppm); corn, field, grain (0.02 ppm); corn, field, stover (0.30 ppm); corn, field, forage (0.15 ppm); eggs (0.03 ppm); fat of cattle, goat, horse, and sheep (0.40 ppm); hog fat (0.04 ppm); hog liver (0.02 ppm); hog meat (0.01 ppm); hog meat byproducts (except liver) (0.01 ppm); liver of cattle, goat, horse, and sheep (0.10 ppm); meat byproducts of cattle, goat, horse, and sheep (except liver) (0.04 ppm); meat of cattle, goat, horse, and sheep (0.04 ppm); milk, fat (reflecting 0.05 ppm in whole milk) (1.50 ppm); poultry fat (0.05 ppm); poultry meat (0.02 ppm); and poultry meat byproducts (0.02 ppm). Recent tolerances for residues have been added for turnip (1.0 ppm) and rutabaga (1.0 ppm).

The DEEM-FCID™ acute analysis was performed assuming tolerance level residues and that 100% of each crop was treated for onions and shallots at 0.03 ppm, potato and sweet potatoes at 0.03 ppm and also included a water (acute) modeled concentration of 0.006909 ppm. Default processing factors were used for all commodities except for potato, flakes and potato, chips, both of which are dried potato commodities. These are usually given the default processing factor of 6.5. HED determined, via residue data, that the processing factors for these commodities are actually <1. Using a processing factor of 1 allows for a more conservative estimate of the acute

dietary exposure and risk.

The DEEM-FCID™ chronic analysis was performed using ARs from field trial data, processing factors, %CT information from the last fipronil dietary analysis (D248827, Levy, 02/20/2001), as noted in Table 1, and also included a water (chronic) modeled concentration of 0.003063 ppm. New AR data for potato and sweet potato commodities, as well as processing factors, were provided by HED (DP Barcode: D313293, M. Sahafeyan, in process). New %CT data for onions, potatoes and sweet potatoes were provided by BEAD (from email, Halvorson).

The following ARs and % CT were used in the Tier 2 chronic analysis for the expected residues of fipronil and its metabolites:

Commodity	AR	%CT
Onion (dry bulb), shallot (dry bulb)	0.030 ppm	42
Potatoes (tuber)	0.028 ppm	39
Potatoes (chip)	0.023 ppm	39
Potatoes (flakes)	0.026 ppm	39
Potatoes (wet peels)	0.390 ppm	39
Sweet Potatoes	0.028 ppm	56

Table 1. Exisiting Fipronil and Metabolite ARs, Processing Factors and %CT Information used for Chronic Dietary Risk Assessment.

Commodity	AR to use in Chronic Dietary Exposure Analysis (ppm)	Processing Factor	CT/Anticipated Market Share (%) [7]
Corn Grain [1] **Includes processed commodities**	0.015	1 x	7.0
Rice Grain [2] **Includes processed commodities Excludes wild rice**	0.020	1 x	21
Cottonseed [3] **Includes processed commodities**	0.0096	Hulls: 0.16 x Meal: 0.02 x Crude Oil: 0.33 x Refined Oil: 0.26 x	10

Table 1. Exisiting Fipronil and Metabolite ARs, Processing Factors and %CT Information used for Chronic Dietary Risk Assessment.

Commodity	AR to use in Chronic Dietary Exposure Analysis (ppm)	Processing Factor	CT/Anticipated Market Share (%) [7]
Cotton Gin Byproducts	0.470	NA	NA
Wheat Grain [2]	0.02		1.0
Meat [5]	0.00094		
Liver [5]	0.0025		
Meat by-products (except liver) [5]	0.00060		
Fat [5]	0.0087		
Milk Fat [6]	0.0029		
Hog Meat	0.00031		
Hog Liver	0.00083		
Hog Meat by-products (except liver)	0.00020		
Hog Fat	0.0029		
Poultry meat	0.00018		
Poultry meat by-products	0.00084		
Poultry fat	0.0023		
Eggs	0.0013		

1 Since residues do not concentrate in processed commodities of corn, the AR of 0.015 ppm should be used for the RAC and processed commodities in the DEEM™ analysis (i.e. corn oil, meal, etc.) except corn sugar for which processing data are not available.

2 Since residues do not concentrate in processed commodities of rice, the AR of 0.02 ppm should be used for the RAC and processed commodities in the DEEM™ analysis (i.e. flour, etc.).

3 Since residues do not concentrate in processed commodities of cottonseed, the AR of 0.0096 ppm should be used for the RAC and processed commodities in the DEEM™ analysis (i.e. cotton meal, cottonseed oil, etc.).

4 Processing data are not available for wheat RACs at this time. The AR of 0.02 ppm should be used for the RAC and processed commodities in the DEEM™ analysis (i.e. wheat bran, etc.).

5 These ARs should also be used for meat, fat, and meat by-products of cattle, goats, horses, and sheep in the DEEM™ analysis.

6 All residues in milk are assumed to concentrate in fat, a value of 0 ppm should be used for other milk fractions.

7 Memo, BEAD, J. Faulkner, 2/1/01.

Processing data for wheat RACs are not available at this time; therefore the wheat, grain tolerance (0.005 ppm) was used for all wheat commodities in both the acute and chronic assessments.

With the proposed tolerance on potato and potato wet peel and the withdrawal of cotton tolerance petition, HED recalculated the maximum theoretical dietary burden (MTDB) for animal commodities based upon the addition of potato culls and processed potato waste to the livestock diet. Estimates indicated that increases in theoretical dietary burden for livestock are not expected from withdrawal of cotton feed items and addition of potato feed items (culls and

processed waste). Thus, current tolerances on livestock are maintained.

The use of fipronil in/on cotton has been withdrawn by the registrant and so for the purpose of this dietary analysis the tolerance for cotton has been removed. The use of fipronil on rice is an overseas use only yet tolerances were included into both the acute and chronic dietary analyses.

This analysis incorporates all current, pending, and proposed tolerances for fipronil as of December 20, 2005.

III. DEEM-FCID™ Program and Consumption Information

A fipronil acute and chronic dietary exposure assessment was conducted using the Dietary Exposure Evaluation Model software with the Food Commodity Intake Database (DEEM-FCID™, Version 2.03), which incorporates consumption data from USDA's Continuing Surveys of Food Intakes by Individuals (CSFII), 1994-1996 and 1998. The 1994-96, 98 data are based on the reported consumption of more than 20,000 individuals over two non-consecutive survey days. Foods "as consumed" (e.g., apple pie) are linked to EPA-defined food commodities (e.g. apples, peeled fruit - cooked; fresh or N/S; baked; or wheat flour - cooked; fresh or N/S, baked) using publicly available recipe translation files developed jointly by USDA/ARS and EPA. Consumption data are averaged for the entire U.S. population and within population subgroups for chronic exposure assessment, but are retained as individual consumption events for acute exposure assessment.

For acute exposure assessments, individual one-day food consumption data are used on an individual-by-individual basis. The reported consumption amounts of each food item can be multiplied by a residue point estimate and summed to obtain a total daily pesticide exposure for a deterministic (Tier 1 or Tier 2) exposure assessment, or "matched" in multiple random pairings with residue values and then summed in a probabilistic (Tier 3/4) assessment. The resulting distribution of exposures is expressed as a percentage of the aPAD on both a user (i.e., those who reported eating relevant commodities/food forms) and a per-capita (i.e., those who reported eating the relevant commodities as well as those who did not) basis. In accordance with HED policy, per capita exposure and risk are reported for all tiers of analysis. However, for tiers 1 and 2, significant differences in user vs. per capita exposure and risk are identified and noted in the risk assessment.

For chronic exposure and risk assessment, an estimate of the residue level in each food or food-form (e.g., orange or orange juice) on the food commodity residue list is multiplied by the average daily consumption estimate for that food/food form. The resulting residue consumption estimate for each food/food form is summed with the residue consumption estimates for all other food/food forms on the commodity residue list to arrive at the total average estimated exposure. Exposure is expressed in mg/kg body weight/day and as a percent of the cPAD. This procedure is performed for each population subgroup.

IV. Toxicological Information

Table 2. Summary of Toxicology Endpoint Selections for Fipronil [a]

Exposure Scenario	Dose Used in Risk Assessment, UF	Special FQPA SF* and Level of Concern for Risk Assessment	Study and Toxicological Effects
Acute Dietary all populations including infants and children	NOAEL=2.5 mg/kg UF = 100 Acute RfD = 0.025 mg/kg/day	FQPA SF = 1x **aPAD** = acute RfD / FQPA SF = 0.025 mg/kg/day	Acute neurotoxicity LOAEL = 7.0 mg/kg based on decreased hind leg splay in males at 7 hours.
Chronic Dietary all populations	NOAEL= 0.019 mg/kg/day UF = 100 Chronic RfD = 0.0002 mg/kg/day	FQPA SF = 1x **cPAD** = chronic RfD / FQPA SF **0.0002 = mg/kg/day**	Chronic/onco rat study LOAEL = 0.059 mg/kg/day based on increased incidence of seizures and death, alterations in clinical chemistry (protein) and TSH, T4.
Cancer (oral, dermal, inhalation)	Group C - possible human carcinogen	Use chronic RfD to estimate human risk	Increases in thyroid follicular cell tumors with fipronil (male/female)

[a] UF = uncertainty factor; FQPA SF = FQPA safety factor; NOAEL = no observed adverse effect level; LOAEL = lowest observed adverse effect level; PAD = population adjusted dose (a = acute, c = chronic); RfD = reference dose.

Based on the hazard and exposure data, the HED Food Quality Protection Act (FQPA) Safety Factor Committee (SFC) determined that the additional **10x factor** for enhanced sensitivity to infants and children (as required by FQPA) should be **removed** (i.e., reduced to 1x) for fipronil and its photodegradate, MB46513 (FQPA Document, HED Doc. No. 012619, 5/12/98). Removing the 10x FQPA SF resulted in the aPAD of 0.025 mg/kg for acute dietary risk assessment and cPAD of 0.0002 mg/kg/day for chronic dietary risk assessment. A PAD is a reference dose (RfD) modified by the FQPA SF (RfD/FQPA SF = PAD).

V. Results/Discussion & Conclusions

As stated above, for acute and chronic assessments, HED is concerned when dietary risk exceeds 100% of the PAD. The DEEM-FCID™ analyses estimate the dietary exposure for the U.S. population and various population subgroups for both the acute and chronic dietary exposures. Results are reported in Table 2 for acute dietary exposures for the general U.S. Population, all infants (<1 year old), children 1-2, children 3-5, children 6-12, youth 13-19, females 13-49, adults 20-49, and adults 50+ years, highlighting the results for the highest exposure group, children 1-2 years old (< 25% aPAD), at the 95th percentile. The results reported in Table 3 are for chronic dietary exposures for the U.S. population and the same 8 population subgroups noted above. A full listing of the residue information used in these analyses is given in Attachments 1 through 4.

Results of Acute Dietary Exposure Analysis

The tier 1 acute dietary risk assessment results are reported at the 95th, 99th and 99.9th percentiles. The exposure assessment incorporated 100% CT and tolerance level residue assumptions. The result for the highest exposure group, children 1-2 years old (25% aPAD), at the 95th percentile is highlighted in Table 3.

Table 3. Results of Acute Dietary Exposure Analysis

Population Subgroup	aPAD (mg/kg/day)	95th Percentile		99th Percentile		99.9th Percentile	
		Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD
General U.S. Population	0.025	0.002458	9.8	0.004385	18	0.007605	30
All Infants	0.025	0.003436	14	0.008115	32	0.011138	45
Children 1-2 years old	0.025	0.006303	**25**	0.008418	34	0.012333	49
Children 3-5 years old	0.025	0.004571	18	0.006420	26	0.010244	41
Children 6-12 years old	0.025	0.002974	12	0.004177	17	0.007166	29
Youth 13-19years old	0.025	0.001889	7.6	0.003077	12	0.005496	22
Adults 20-49 years old	0.025	0.001460	5.8	0.002450	9.8	0.003876	16
Females 13-49 years old	0.025	0.001410	5.6	0.002064	8.3	0.003544	14
Adults 50+ years old	0.025	0.001211	4.8	0.002056	8.2	0.004179	17

Results of Chronic Dietary Exposure Analysis

The Tier 2 chronic dietary risk assessment was conducted for fipronil food uses. A partially refined analysis was performed using ARs, processing factors where applicable, and % CT information. For all commodities, **the chronic risk estimates exceed the Agency's level of concern** for the all infants (< 1 year old) (120% of the cPAD).

Table 4. Results of Chronic Dietary Exposure Analysis

Population Subgroup	cPAD (mg/kg/day)	Exposure (mg/kg/day)	% cPAD
General U.S. Population	0.0002	0.000095	47
All Infants (< 1 year old)	0.0002	0.000239	120
Children 1-2 years old	0.0002	0.000156	78
Children 3-5 years old	0.0002	0.000142	71
Children 6-12 years old	0.0002	0.000094	47
Youth 13-19 years old	0.0002	0.000070	35
Adults 20-49 years old	0.0002	0.000083	42
Females 13-49 years old	0.0002	0.000081	40
Adults 50+ years old	0.0002	0.000101	51

VI. List of Attachments

Attachment 1- Results of Tier 1 Acute Dietary Analysis of Fipronil
Attachment 2- Residue Inputs for Tier 1 Acute Dietary Assessment of Fipronil
Attachment 3- Results of Tier 2 Chronic Dietary Analysis for Fipronil
Attachment 4- Residue Inputs for Tier 2 Chronic Dietary Assessment of Fipronil

Attachment 1- Results of Tier 1 Acute Dietary Analysis of Fipronil

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U.S. Environmental Protection Agency                                    Ver. 2.02
DEEM-FCID ACUTE Analysis for FIPRONIL                                 (1994-98 data)
Residue file: 129121a.R98                          Adjustment factor #2 NOT used.
Analysis Date: 12-15-2005/14:43:06    Residue file dated: 12-15-2005/14:41:00/8
NOEL (Acute) =    2.500000 mg/kg body-wt/day
Daily totals for food and foodform consumption used.
Run Comment: "THIS R98 FILE WAS GENERATED RS7toR98 VERSION 1.1.2. COMMENT FROM
 THE SOURCE RS7 FILE: Acute - Tier 2"
================================================================================

Summary calculations (per capita):
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	95th Percentile			99th Percentile			99.9th Percentile	
	Exposure	% aRfD	MOE	Exposure	% aRfD	MOE	Exposure	% aRfD	MOE
U.S. Population:									
	0.002458	9.83	1016	0.004385	17.54	570	0.007605	30.42	328
All infants:									
	0.003436	13.74	727	0.008115	32.46	308	0.011138	44.55	224
Children 1-2 yrs:									
	0.006303	25.21	396	0.008418	33.67	296	0.012333	49.33	202
Children 3-5 yrs:									
	0.004571	18.28	546	0.006420	25.68	389	0.010244	40.98	244
Children 6-12 yrs:									
	0.002974	11.89	840	0.004177	16.71	598	0.007166	28.66	348
Youth 13-19 yrs:									
	0.001889	7.56	1323	0.003077	12.31	812	0.005496	21.98	454
Adults 20-49 yrs:									
	0.001460	5.84	1712	0.002450	9.80	1020	0.003876	15.50	644
Adults 50+ yrs:									
	0.001211	4.84	2065	0.002056	8.22	1215	0.004179	16.72	598
Females 13-49 yrs:									
	0.001410	5.64	1773	0.002064	8.25	1211	0.003544	14.18	705

Attachment 2- Residue Inputs for Tier 1 Acute Dietary Assessment of Fipronil

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U.S. Environmental Protection Agency                                    Ver. 2.02
DEEM-FCID Acute analysis for FIPRONIL
Residue file name: C:\My Documents\Breann's Work\ARIA\Fipronil\EVERYTHING\129121a.R98
Analysis Date 12-15-2005              Residue file dated: 12-15-2005/14:41:00/8
Reference dose: aRfD = 0.025 mg/kg bw/day  NOEL = 2.5 mg/kg bw/day
Comment: THIS R98 FILE WAS GENERATED RS7toR98 VERSION 1.1.2. COMMENT FROM THE SOURCE
RS7 FILE: Acute - Tier 2
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EPA Code	Crop Grp	Food Name	Def Res (ppm)	Adj. Factors #1	#2	Comment
21000440	M	Beef, meat	0.040000	1.000	1.000	
21000441	M	Beef, meat-babyfood	0.040000	1.000	1.000	
21000450	M	Beef, meat, dried	0.040000	1.920	1.000	
21000460	M	Beef, meat byproducts	0.040000	1.000	1.000	
21000461	M	Beef, meat byproducts-babyfood	0.040000	1.000	1.000	
21000470	M	Beef, fat	0.400000	1.000	1.000	
21000471	M	Beef,fat-babyfood	0.400000	1.000	1.000	
21000480	M	Beef, kidney	0.040000	1.000	1.000	
21000490	M	Beef, liver	0.100000	1.000	1.000	
21000491	M	Beef, liver-babyfood	0.100000	1.000	1.000	
40000930	P	Chicken, meat	0.020000	1.000	1.000	
40000931	P	Chicken, meat-babyfood	0.020000	1.000	1.000	
40000940	P	Chicken, liver	0.020000	1.000	1.000	
40000950	P	Chicken, meat byproducts	0.020000	1.000	1.000	
40000951	P	Chicken, meat byproducts-babyfoo	0.020000	1.000	1.000	
40000960	P	Chicken, fat	0.050000	1.000	1.000	
40000961	P	Chicken, fat-babyfood	0.050000	1.000	1.000	
40000970	P	Chicken, skin	0.020000	1.000	1.000	
40000971	P	Chicken, skin-babyfood	0.020000	1.000	1.000	
15001200	15	Corn, field, flour	0.020000	1.000	1.000	
15001201	15	Corn, field, flour-babyfood	0.020000	1.000	1.000	
15001210	15	Corn, field, meal	0.020000	1.000	1.000	
15001211	15	Corn, field, meal-babyfood	0.020000	1.000	1.000	
15001220	15	Corn, field, bran	0.020000	1.000	1.000	
15001230	15	Corn, field, starch	0.020000	1.000	1.000	
15001231	15	Corn, field, starch-babyfood	0.020000	1.000	1.000	
15001240	15	Corn, field, syrup	0.020000	1.500	1.000	
15001241	15	Corn, field, syrup-babyfood	0.020000	1.500	1.000	
15001250	15	Corn, field, oil	0.020000	1.000	1.000	
15001251	15	Corn, field, oil-babyfood	0.020000	1.000	1.000	
70001450	P	Egg, whole	0.030000	1.000	1.000	
70001451	P	Egg, whole-babyfood	0.030000	1.000	1.000	
70001460	P	Egg, white	0.030000	1.000	1.000	
70001461	P	Egg, white (solids)-babyfood	0.030000	1.000	1.000	
70001470	P	Egg, yolk	0.030000	1.000	1.000	
70001471	P	Egg, yolk-babyfood	0.030000	1.000	1.000	
23001690	M	Goat, meat	0.040000	1.000	1.000	
23001700	M	Goat, meat byproducts	0.040000	1.000	1.000	
23001710	M	Goat, fat	0.400000	1.000	1.000	
23001720	M	Goat, kidney	0.040000	1.000	1.000	
23001730	M	Goat, liver	0.100000	1.000	1.000	
27002220	D	Milk, fat	1.500000	1.000	1.000	
27002221	D	Milk, fat - baby food/infant for	1.500000	1.000	1.000	
03002370	3	Onion, dry bulb	0.030000	1.000	1.000	
03002371	3	Onion, dry bulb-babyfood	0.030000	1.000	1.000	
03002380	3	Onion, dry bulb, dried	0.030000	9.000	1.000	
03002381	3	Onion, dry bulb, dried-babyfood	0.030000	9.000	1.000	
25002900	M	Pork, meat	0.010000	1.000	1.000	
25002901	M	Pork, meat-babyfood	0.010000	1.000	1.000	
25002910	M	Pork, skin	0.010000	1.000	1.000	

25002920	M	Pork, meat byproducts	0.010000	1.000	1.000
25002921	M	Pork, meat byproducts-babyfood	0.010000	1.000	1.000
25002930	M	Pork, fat	0.040000	1.000	1.000
25002931	M	Pork, fat-babyfood	0.040000	1.000	1.000
25002940	M	Pork, kidney	0.010000	1.000	1.000
25002950	M	Pork, liver	0.020000	1.000	1.000
01032960	1C	Potato, chips	0.030000	1.000	1.000
01032970	1C	Potato, dry (granules/ flakes)	0.030000	1.000	1.000
01032971	1C	Potato, dry (granules/ flakes)-b	0.030000	1.000	1.000
01032980	1C	Potato, flour	0.030000	1.000	1.000
01032981	1C	Potato, flour-babyfood	0.030000	1.000	1.000
01032990	1C	Potato, tuber, w/peel	0.030000	1.000	1.000
01032991	1C	Potato, tuber, w/peel-babyfood	0.030000	1.000	1.000
01033000	1C	Potato, tuber, w/o peel	0.030000	1.000	1.000
01033001	1C	Potato, tuber, w/o peel-babyfood	0.030000	1.000	1.000
60003010	P	Poultry, other, meat	0.020000	1.000	1.000
60003020	P	Poultry, other, liver	0.020000	1.000	1.000
60003030	P	Poultry, other, meat byproducts	0.020000	1.000	1.000
60003040	P	Poultry, other, fat	0.050000	1.000	1.000
60003050	P	Poultry, other, skin	0.020000	1.000	1.000
15003230	15	Rice, white	0.040000	1.000	1.000
15003231	15	Rice, white-babyfood	0.040000	1.000	1.000
15003240	15	Rice, brown	0.040000	1.000	1.000
15003241	15	Rice, brown-babyfood	0.040000	1.000	1.000
15003250	15	Rice, flour	0.040000	1.000	1.000
15003251	15	Rice, flour-babyfood	0.040000	1.000	1.000
15003260	15	Rice, bran	0.040000	1.000	1.000
15003261	15	Rice, bran-babyfood	0.040000	1.000	1.000
01013270	1AB	Rutabaga	1.000000	1.000	1.000
03003380	3	Shallot	0.030000	1.000	1.000
26003390	M	Sheep, meat	0.040000	1.000	1.000
26003391	M	Sheep, meat-babyfood	0.040000	1.000	1.000
26003400	M	Sheep, meat byproducts	0.040000	1.000	1.000
26003410	M	Sheep, fat	0.400000	1.000	1.000
26003411	M	Sheep, fat-babyfood	0.400000	1.000	1.000
26003420	M	Sheep, kidney	0.040000	1.000	1.000
26003430	M	Sheep, liver	0.100000	1.000	1.000
01033660	1CD	Sweet potato	0.030000	1.000	1.000
01033661	1CD	Sweet potato-babyfood	0.030000	1.000	1.000
15003810	15	Triticale, flour	0.005000	1.000	1.000
15003811	15	Triticale, flour-babyfood	0.005000	1.000	1.000
50003820	P	Turkey, meat	0.020000	1.000	1.000
50003821	P	Turkey, meat-babyfood	0.020000	1.000	1.000
50003830	P	Turkey, liver	0.020000	1.000	1.000
50003831	P	Turkey, liver-babyfood	0.020000	1.000	1.000
50003840	P	Turkey, meat byproducts	0.020000	1.000	1.000
50003841	P	Turkey, meat byproducts-babyfood	0.020000	1.000	1.000
50003850	P	Turkey, fat	0.050000	1.000	1.000
50003851	P	Turkey, fat-babyfood	0.050000	1.000	1.000
50003860	P	Turkey, skin	0.020000	1.000	1.000
50003861	P	Turkey, skin-babyfood	0.020000	1.000	1.000
01013680	1AB	Turnip, roots	1.000000	1.000	1.000
05023690	5B	Turnip, greens	1.000000	1.000	1.000
86010000	O	Water, direct, all sources	0.006909	1.000	1.000
86020000	O	Water, indirect, all sources	0.006909	1.000	1.000
15004010	15	Wheat, grain	0.005000	1.000	1.000
15004011	15	Wheat, grain-babyfood	0.005000	1.000	1.000
15004020	15	Wheat, flour	0.005000	1.000	1.000
15004021	15	Wheat, flour-babyfood	0.005000	1.000	1.000
15004030	15	Wheat, germ	0.005000	1.000	1.000
15004040	15	Wheat, bran	0.005000	1.000	1.000

Attachment 3- Results of Tier 2 Chronic Dietary Analysis for Fipronil

U.S. Environmental Protection Agency Ver. 2.00
DEEM-FCID Chronic analysis for FIPRONIL (1994-98 data)
Residue file name: C:\My Documents\Breann's Work\ARIA\Fipronil\EVERYTHING\129121c.R98
Adjustment factor #2 used.
Analysis Date 12-20-2005/09:51:22 Residue file dated: 12-20-2005/09:50:55/8
Reference dose (RfD, Chronic) = .0002 mg/kg bw/day
COMMENT 1: THIS R98 FILE WAS GENERATED RS7toR98 VERSION 1.1.2. COMMENT FROM THE SOURCE RS7 FILE: Chronic

Total exposure by population subgroup

Population Subgroup	Total Exposure mg/kg body wt/day	Percent of Rfd
U.S. Population (total)	0.000095	47.4%
U.S. Population (spring season)	0.000091	45.3%
U.S. Population (summer season)	0.000096	48.0%
U.S. Population (autumn season)	0.000099	49.5%
U.S. Population (winter season)	0.000094	46.9%
Northeast region	0.000084	41.8%
Midwest region	0.000093	46.7%
Southern region	0.000101	50.6%
Western region	0.000097	48.3%
Hispanics	0.000098	49.0%
Non-hispanic whites	0.000089	44.4%
Non-hispanic blacks	0.000123	61.3%
Non-hisp/non-white/non-black	0.000108	53.9%
All infants (< 1 year)	0.000239	119.6%
Nursing infants	0.000091	45.7%
Non-nursing infants	0.000295	147.6%
Children 1-6 yrs	0.000144	71.8%
Children 7-12 yrs	0.000088	44.2%
Females 13-19 (not preg or nursing)	0.000065	32.7%
Females 20+ (not preg or nursing)	0.000093	46.3%
Females 13-50 yrs	0.000084	42.0%
Females 13+ (preg/not nursing)	0.000080	40.2%
Females 13+ (nursing)	0.000108	54.1%
Males 13-19 yrs	0.000074	37.0%
Males 20+ yrs	0.000087	43.4%
Seniors 55+	0.000106	52.8%
Children 1-2 yrs	0.000156	78.0%
Children 3-5 yrs	0.000142	70.9%
Children 6-12 yrs	0.000094	46.8%
Youth 13-19 yrs	0.000070	35.0%
Adults 20-49 yrs	0.000083	41.7%
Adults 50+ yrs	0.000101	50.6%
Females 13-49 yrs	0.000081	40.4%

Attachment 4- Residue Inputs for Tier 2 Chronic Dietary Assessment of Fipronil

U.S. Environmental Protection Agency Ver. 2.00
DEEM-FCID Chronic analysis for FIPRONIL 1994-98 data
Residue file: C:\My Documents\Breann's Work\ARIA\Fipronil\EVERYTHING\129121c.R98
Adjust. #2 used
Analysis Date 12-20-2005 Residue file dated: 12-20-2005/09:50:55/8
Reference dose (RfD) = 0.0002 mg/kg bw/day
Comment:CHIS R98 FILE WAS GENERATED RS7toR98 VERSION 1.1.2. COMMENT FROM THE SOURCE RS7 FILE Chronic

Food Crop EPA Code	Grp	Food Name	Residue (ppm)	Adj. Factors #1	Adj. Factors #2	Comment
21000440	M	Beef, meat	0.000940	1.000	1.000	
21000441	M	Beef, meat-babyfood	0.000940	1.000	1.000	
21000450	M	Beef, meat, dried	0.000940	1.920	1.000	
21000460	M	Beef, meat byproducts	0.000600	1.000	1.000	
21000461	M	Beef, meat byproducts-babyfood	0.000600	1.000	1.000	
21000470	M	Beef, fat	0.008700	1.000	1.000	
21000471	M	Beef,fat-babyfood	0.008700	1.000	1.000	
21000480	M	Beef, kidney	0.000600	1.000	1.000	
21000490	M	Beef, liver	0.002500	1.000	1.000	
21000491	M	Beef, liver-babyfood	0.002500	1.000	1.000	
40000930	P	Chicken, meat	0.000180	1.000	1.000	
40000931	P	Chicken, meat-babyfood	0.000180	1.000	1.000	
40000940	P	Chicken, liver	0.000840	1.000	1.000	
40000950	P	Chicken, meat byproducts	0.000840	1.000	1.000	
40000951	P	Chicken, meat byproducts-babyfoo	0.000840	1.000	1.000	
40000960	P	Chicken, fat	0.002300	1.000	1.000	
40000961	P	Chicken, fat-babyfood	0.002300	1.000	1.000	
40000970	P	Chicken, skin	0.002300	1.000	1.000	
40000971	P	Chicken, skin-babyfood	0.002300	1.000	1.000	
15001200	15	Corn, field, flour	0.015000	1.000	0.070	
15001201	15	Corn, field, flour-babyfood	0.015000	1.000	0.070	
15001210	15	Corn, field, meal	0.015000	1.000	0.070	
15001211	15	Corn, field, meal-babyfood	0.015000	1.000	0.070	
15001220	15	Corn, field, bran	0.015000	1.000	0.070	
15001230	15	Corn, field, starch	0.015000	1.000	0.070	
15001231	15	Corn, field, starch-babyfood	0.015000	1.000	0.070	
15001240	15	Corn, field, syrup	0.015000	1.500	0.070	
15001241	15	Corn, field, syrup-babyfood	0.015000	1.500	0.070	
15001250	15	Corn, field, oil	0.015000	1.000	0.070	
15001251	15	Corn, field, oil-babyfood	0.015000	1.000	0.070	
70001450	P	Egg, whole	0.001300	1.000	1.000	
70001451	P	Egg, whole-babyfood	0.001300	1.000	1.000	
70001460	P	Egg, white	0.001300	1.000	1.000	
70001461	P	Egg, white (solids)-babyfood	0.001300	1.000	1.000	
70001470	P	Egg, yolk	0.001300	1.000	1.000	
70001471	P	Egg, yolk-babyfood	0.001300	1.000	1.000	
23001690	M	Goat, meat	0.000940	1.000	1.000	
23001700	M	Goat, meat byproducts	0.000940	1.000	1.000	
23001710	M	Goat, fat	0.008700	1.000	1.000	
23001720	M	Goat, kidney	0.000600	1.000	1.000	
23001730	M	Goat, liver	0.002500	1.000	1.000	
27002220	D	Milk, fat	0.002900	1.000	1.000	
27002221	D	Milk, fat - baby food/infant for	0.002900	1.000	1.000	
03002370	3	Onion, dry bulb	0.030000	1.000	0.420	
03002371	3	Onion, dry bulb-babyfood	0.030000	1.000	0.420	
03002380	3	Onion, dry bulb, dried	0.030000	9.000	0.420	
03002381	3	Onion, dry bulb, dried-babyfood	0.030000	9.000	0.420	
25002900	M	Pork, meat	0.000310	1.000	1.000	
25002901	M	Pork, meat-babyfood	0.000310	1.000	1.000	

25002910	M	Pork, skin	0.002900	1.000	1.000
25002920	M	Pork, meat byproducts	0.000200	1.000	1.000
25002921	M	Pork, meat byproducts-babyfood	0.000200	1.000	1.000
25002930	M	Pork, fat	0.002900	1.000	1.000
25002931	M	Pork, fat-babyfood	0.002900	1.000	1.000
25002940	M	Pork, kidney	0.000200	1.000	1.000
25002950	M	Pork, liver	0.000830	1.000	1.000
01032960	1C	Potato, chips	0.023000	0.400	0.390
01032970	1C	Potato, dry (granules/ flakes)	0.026000	0.470	0.390
01032971	1C	Potato, dry (granules/ flakes)-b	0.026000	0.470	0.390
01032980	1C	Potato, flour	0.030000	1.000	0.390
01032981	1C	Potato, flour-babyfood	0.030000	1.000	0.390
01032990	1C	Potato, tuber, w/peel	0.028000	1.000	0.390
01032991	1C	Potato, tuber, w/peel-babyfood	0.028000	1.000	0.390
01033000	1C	Potato, tuber, w/o peel	0.028000	1.000	0.390
01033001	1C	Potato, tuber, w/o peel-babyfood	0.028000	1.000	0.390
60003010	P	Poultry, other, meat	0.000180	1.000	1.000
60003020	P	Poultry, other, liver	0.000840	1.000	1.000
60003030	P	Poultry, other, meat byproducts	0.002300	1.000	1.000
60003040	P	Poultry, other, fat	0.002300	1.000	1.000
60003050	P	Poultry, other, skin	0.002300	1.000	1.000
15003230	15	Rice, white	0.020000	1.000	0.210
15003231	15	Rice, white-babyfood	0.020000	1.000	0.210
15003240	15	Rice, brown	0.020000	1.000	0.210
15003241	15	Rice, brown-babyfood	0.020000	1.000	0.210
15003250	15	Rice, flour	0.020000	1.000	0.210
15003251	15	Rice, flour-babyfood	0.020000	1.000	0.210
15003260	15	Rice, bran	0.020000	1.000	0.210
15003261	15	Rice, bran-babyfood	0.020000	1.000	0.210
01013270	1AE	Rutabaga	1.000000	1.000	1.000
03003380	3	Shallot	0.030000	1.000	1.000
26003390	M	Sheep, meat	0.000940	1.000	1.000
26003391	M	Sheep, meat-babyfood	0.000940	1.000	1.000
26003400	M	Sheep, meat byproducts	0.000600	1.000	1.000
26003410	M	Sheep, fat	0.008700	1.000	1.000
26003411	M	Sheep, fat-babyfood	0.008700	1.000	1.000
26003420	M	Sheep, kidney	0.000600	1.000	1.000
26003430	M	Sheep, liver	0.002500	1.000	1.000
01033660	1CD	Sweet potato	0.028000	1.000	0.560
01033661	1CD	Sweet potato-babyfood	0.028000	1.000	0.560
15003810	15	Triticale, flour	0.005000	1.000	0.010
15003811	15	Triticale, flour-babyfood	0.005000	1.000	0.010
50003820	P	Turkey, meat	0.000180	1.000	1.000
50003821	P	Turkey, meat-babyfood	0.000180	1.000	1.000
50003830	P	Turkey, liver	0.000840	1.000	1.000
50003831	P	Turkey, liver-babyfood	0.000840	1.000	1.000
50003840	P	Turkey, meat byproducts	0.000840	1.000	1.000
50003841	P	Turkey, meat byproducts-babyfood	0.000840	1.000	1.000
50003850	P	Turkey, fat	0.002300	1.000	1.000
50003851	P	Turkey, fat-babyfood	0.002300	1.000	1.000
50003860	P	Turkey, skin	0.002300	1.000	1.000
50003861	P	Turkey, skin-babyfood	0.002300	1.000	1.000
01013880	1AE	Turnip, roots	1.000000	1.000	1.000
05023890	5B	Turnip, greens	1.000000	1.000	1.000
86010000	O	Water, direct, all sources	0.003063	1.000	1.000
86020000	O	Water, indirect, all sources	0.003063	1.000	1.000
15004010	15	Wheat, grain	0.005000	1.000	0.010
15004011	15	Wheat, grain-babyfood	0.005000	1.000	0.010
15004020	15	Wheat, flour	0.005000	1.000	0.010
15004021	15	Wheat, flour-babyfood	0.005000	1.000	0.010
15004030	15	Wheat, germ	0.005000	1.000	0.010

13544

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Chemical: Fipronil

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129121

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